

Essential Silicon Carbide Based Integrated Circuits for Extreme Environments, Phase I

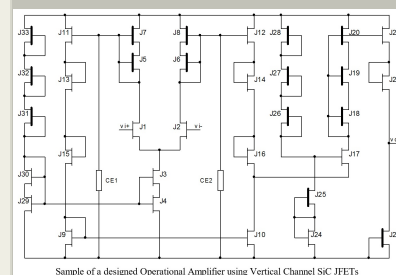
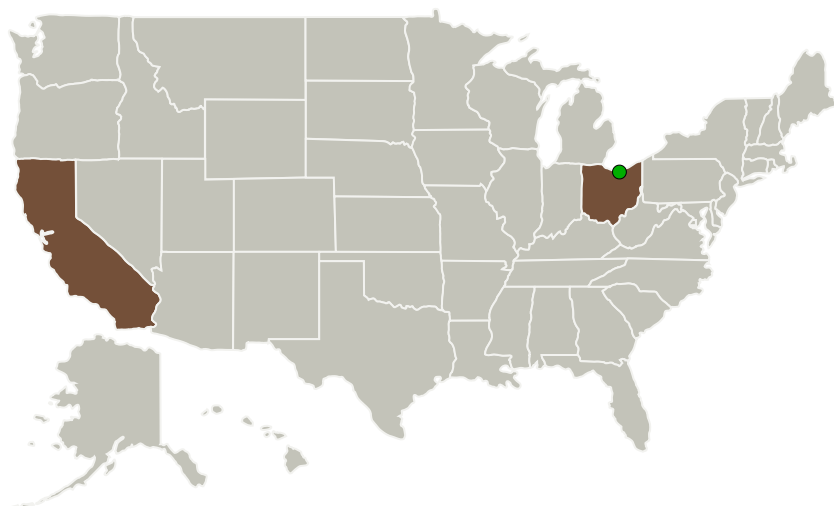
Completed Technology Project (2017 - 2017)



Project Introduction

This Small Business Innovation Research Phase I project will design Silicon Carbide based integrated circuits that will be capable of surviving and functioning at harsh environments. There are numerous design and fabrication challenges that are required to be addressed for a successful Silicon Carbide integrated circuit development. Silicon Carbide devices have already been fabricated and tested. During the Phase I, essential integrated circuit for harsh environment applications will be designed, and the prototypes will be fabricated during the Phase II effort.

Primary U.S. Work Locations and Key Partners




Sample of a designed Operational Amplifier using Vertical Channel SiC JFETs

Essential Silicon Carbide Based Integrated Circuits for Extreme Environments, Phase I Briefing Chart Image

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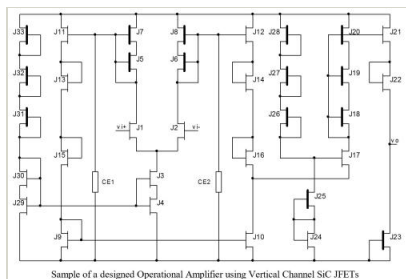
| Organizations Performing Work | Role | Type | Location |
|--|-------------------------|-------------|-----------------------|
| AYMACS, Inc. | Lead Organization | Industry | San Diego, California |
|  Glenn Research Center(GRC) | Supporting Organization | NASA Center | Cleveland, Ohio |

Primary U.S. Work Locations

| | |
|------------|------|
| California | Ohio |
|------------|------|



Images



Briefing Chart Image

Essential Silicon Carbide Based Integrated Circuits for Extreme Environments, Phase I Briefing Chart Image

(<https://techport.nasa.gov/image/132364>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

AYMACS, Inc.

Responsible Program:

Small Business Innovation
Research/Small Business Tech
Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

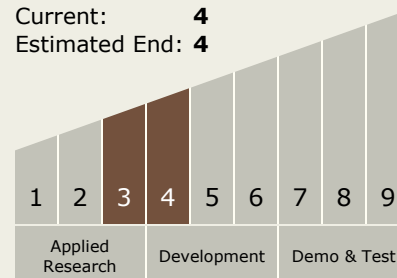
Ayden Maralani

Technology Maturity (TRL)

Start: **3**

Current: **4**

Estimated End: **4**



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.3 Power Management and Distribution
 - └ TX03.3.4 Advanced Electronic Parts

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System